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NOTE

Fleas of the genus *Ceratophyllus* (Siphonaptera: Ceratophyllidae) in the southeastern United States

Species of *Ceratophyllus* Curtis are rare in collections in the southeastern USA. Previous records of this genus in the southeastern USA include *Ceratophyllus* (*Ceratophyllus*) *idius* Jordan and Rothschild from nests of the purple martin, *Progne subis* (Linnaeus), and *Ceratophyllus* (*Monopsyllus*) *vison* Baker from the nest of the red squirrel, *Tamiasciurus hudsonicus* (Erxleben), in Tennessee (e.g., Benton 1980, Durden and Kollars 1997). Collections were made to determine if this genus is present in Georgia, North Carolina, and South Carolina. We report for the first time *Ceratophyllus* (Ceratophyllus) *celsus* Jordan in Georgia and South Carolina, *Ceratophyllus* (Ceratophyllus) *gallinae* (Schrank) in North Carolina, and *C. vison* in North Carolina. Our new records increase the total number of fleas recorded from Georgia to 20, North Carolina to 19 (Benton 1980), and South Carolina to 26 (Durden et al. 1999). *Echidnophaga gallinacea* (Westwood) (Pulicidae) has been the only other bird flea reported from the states we investigated (Benton 1980). Due to the proximity of Georgia, North Carolina, and South Carolina to Appalachian records of *C. idius* in Tennessee, we suspect that this flea is also present in the mountains of these states. Further inspection of appropriate hosts, along with their respective nests and burrows, likely will produce new distribution records for species of *Ceratophyllus* in this region. Knowledge concerning the distributions of flea species will allow for vigilant monitoring of fleas as pests and possible vectors of zoonotic agents. Adult fleas were identified using Benton (1983). Voucher specimens of *C. celsus* have been deposited in the Clemson University Arthropod Collection and the National Museum of Natural History, Smithsonian Institution, and *C. gallinae* and *C. vison* in the Great Smoky Mountains National Park Museum (GSMNP).

Ceratophyllus (*Ceratophyllus*) *celsus* Jordan, 1926

This species is an ectoparasite of cliff swallows, *Petrochelidon pyrrhonota* (Vieillot), is found throughout much of North America. Except for a Virginia record (Eckerlin et al. 2003) there have been no other confirmed records from the southeastern USA of this species (i.e., states east of the Mississippi and south of Indiana through Delaware). In the eastern United States, *C. celsus* has been recorded from Michigan, New York, and Vermont (Osgood 1964, Benton 1980). In eastern Canada, *C. celsus* has been recorded from New Brunswick, Ontario, and Québec (Holland 1985). Whether *C. celsus* is a vector or reservoir of zoonotic agents of disease remains unknown; however, it is a suspected vector of an avian-associated *Trypanosoma* sp. (Hopla and Loye 1983).

New records.—20 ♀, 13 ♂, 3 pupae, west face of bridge over Seneca River, (34.6535°N, 82.8518°W), Oconee Co., SC, coll. Will K. Reeves (WKR), James A. Korecki (JAK), and Mark P. Nelder (MPN), 12.VII.2004, ex: abandoned nest of *P. pyrrhonota*; 15 ♀, 10 ♂, bridge going over Lake Keowee (34.8115°N, 82.9225°W), Pickens Co., SC, coll. JAK, 12.VII.2004, ex: abandoned nest of *P. pyrrhonota*; 3 pupae, I-285 bridge over Chattahoochee River, (33.9016°N, 84.4420°W), Cobb Co., GA, coll. WKR, 6.VIII.2004, ex: abandoned nest of *P. pyrrhonota*.

Ceratophyllus (*Ceratophyllus*) *gallinae* (Schrank, 1803)

Known as the European chicken flea, *C. gallinae* is a Holarctic ectoparasite of birds (mostly passerines) and mammals (mostly rodents). *Ceratophyllus gallinae* likely was introduced into eastern North America from Europe on domestic poultry (Lewis and Galloway 2001). In the eastern United States, *C. gallinae* has been recorded from Connecticut, Delaware, Maine, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Vermont, and West Virginia (Fox 1940, Osgood 1964, Shaw and Hovey 1954, Benton 1980, Eckerlin and Painter 2000). In eastern Canada, *C. gallinae* has been reported from New Brunswick, Newfoundland, Nova Scotia, Ontario, Prince Edward Island, and Québec (Holland 1985). *Ceratophyllus gallinae* is a biting pest of domestic poultry in Europe and the northeastern USA (Fox 1940, Shaw and Hovey 1954) and also bites and infests people working in chicken coops (Haas and Wilson 1973).

New records.—2 ♀, 1 ♂, Purchase Creek (GSMNP), (35.5851°N, 83.0626°W), Haywood Co., NC, coll. WKR, 23.VII.2002, ex: abandoned blue bird nest inhabited by deer mice, *Peromyscus maniculatus* Walker, accession no. L-3002.

Ceratophyllus (*Monopsyllus*) *vison* Baker, 1904

This species is considered a specific ectoparasite of the red squirrel, *T. hudsonicus,* but has been reported from other rodents and mustelid carnivores (Fox 1940, Durden and Kollars 1997). In the eastern United States, *C. vison* has been recorded from Maine, Massachusetts, Michigan, New Hampshire, New York, Tennessee, West Virginia, and Vermont (Fox 1940, Osgood 1964, Benton 1980). In eastern Canada, *C. vison* has been reported from Labrador (Newfoundland), New Brunswick, Nova Scotia, Ontario, and Québec, (e.g., Traub et al. 1983, Holland 1985). The potential of *C. vison* as a vector of zoonotic agents is unknown.

New records.—1 ♀, Clingman's Dome (GSMNP), (35.5588°N, 83.4949°W), Sevier Co., TN, coll. E. Pivorun, 5.VI.2004, ex. *T. hudsonicus,* accession no. L-2956; 3 ♀, 1 ♂, Mt. LeConte (GSMNP), (35.6549°N, 83.4408°W), Sevier Co., TN, coll. K. Walters, 14.VI.2004, ex. *T. hudsonicus,* accession no. L-3048; 1 ♀, Oconaluftee (GSMNP), (35.5171°N, 83.3068°W), Swain Co., NC, coll. WKR, 5.VI.2004, ex. *Tamias striatus* (Linnaeus), accession no. L-2932.

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